REMARKS

In the Official Action mailed on **06 February 2008**, the Examiner reviewed claims 1-35. Examiner rejected claims 1-35 under 35 U.S.C. § 103(a) based on Zhang et al (U.S. Pub 2003/0061587, hereinafter “Zhang”), Pierrat et al. (U.S. Patent No. 6,453,457, hereinafter “Pierrat”), and Liebchen (U.S. Patent No. 6,738.859 hereinafter "Liebchen"). Examiner further rejected claims 1, 12, 23, 34, and 35 under 35 U.S.C. § 103(a) as being unpatentable over Pierrat (U.S. Patent No. 7,010,764, hereinafter Perrat’764), in view of Liebchen (U.S. Patent No. 6,738,859, hereinafter Liebchen).

Rejections under 35 U.S.C. § 103(a)

Claims 1-35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang, in view of Pierrat, and further in view of Liebchen. Applicant respectfully disagrees because Zhang, Pierrat, and Liebchen do not disclose calibrating the association between 2-D intensity gradient, which includes angle and magnitude, and segment length by: modeling a 2-D intensity gradient which includes both angle and magnitude across a test pattern; identifying target regions in the rest pattern that have a large amount of correction shift variation; mapping intensity gradient which includes both angle and magnitude to the target region; associating segment length with the target regions; and producing an association between the angles and magnitudes of the intensity gradients and segment lengths in the target regions, whereby the association is subsequently used in generating the segmentation for the layout.

Examiner avers that the combined teachings of Zhang, Pierrat, and Liebchen substantially disclose calibrating the association between intensity gradients and segment length by mapping the intensity gradients to the target regions and producing an association between intensity gradients and segment length in the target regions, whereby the association is subsequently used in generating the segmentation for the layout (see the Office Action, page 6, the last paragraph and page 7, the first paragraph). However, a close examination of the text cited by Examiner, namely FIG. 5, col. 5, line 8-col. 6, line 42 of Pierrat, and pars. [0030]-[0034] of Zhang, does not render such an conclusion.

Col. 5, line 8-col. 6, line 42 of Pierrat discloses: (1) deriving dissection points from a few easily defined parameters (see col. 5, ll. 6-29 of Pierrat), (2) using a profile from a proximity effects model to dissect the edge (see col. 5, ll. 30-44 of Pierrat), (3) deriving segment lengths based on profiles of amplitudes (see col. 5, ll. 45-60 of Pierrat), (4) determining an evaluation point for the edge based on a profile of amplitude output from a proximity effects model (see col. 5, line 61-col. 6, line 42 of Pierrat). Fig. 5 illustrates the profile of model amplitude and its first and second derivatives, and dissection points are added based on the first and second derivatives (see col. 13, ll. 40-45 and col. 14, ll. 27-37 of Pierrat). Pierrat does not mention calibrating the association between 2-D intensity gradient, which includes angle and magnitude, and segment length. More specifically, Pierrat does not mention producing an association between the angles and magnitudes of the intensity gradients and segment lengths in the target regions, whereby the association is subsequently used in generating the segmentation for the layout.

Pars. [0030]-[0034] of Zhang merely discloses line end geometry including several layers, such as dissection point layer, which shows dissection points; evaluation layer, which shows evaluation points; reached limit layer, which indicates line segments that received the maximum allowed correction; CD error layer, which identifies areas where the critical dimension of the input layout could not be met; and low contrast layer, which identifies image regions where the light intensity gradient is poor; after optical proximity correction. Zhang does not mention calibrating the association between 2-D intensity gradient, which includes angle and magnitude, and segment length.

Liebchen, on the other hand, discloses a method for simulating a projection lithography system using the Hopkins model, which treats the electric field forming the image as a scalar and assumes the incident field is represented by a multiplicative function (see col 3, line 65-col. 4, line 2, and col. 2, ll. 24-27 of Liebchen). Liebchen does not disclose calibrating the association between 2-D intensity gradient, which includes angle and magnitude, and segment length.

There is nothing in Zhang, Pierrat, and Liebchen, either separate or in concert, that disclose calibrating the association between 2-D intensity gradient, which includes angle and magnitude, and segment length.

Accordingly, Applicant has amended claims 1, 12, 23, 34, and 35 to clarify that the instant application teaches calibrating the association between 2-D intensity gradient, which includes angle and magnitude, and segment length by: modeling a 2-D intensity gradient which includes both angle and magnitude across a test pattern; identifying target regions in the rest pattern that have a large amount of correction shift variation; mapping intensity gradient which includes both angle and magnitude to the target region; associating segment length with the target regions; and producing an association between the angles and magnitudes of the intensity gradients and segment lengths in the target regions, whereby the association is subsequently used in generating the segmentation for the layout. These amendments find support in pars. [0044]-[0048] of the instant application. No new matter has been added. Claims 11, 22, and 33 have been cancelled without prejudice.

Hence, Applicant respectfully submits that independent claims 1, 12, 23, and 34-35 as currently amended are in condition for allowance. Applicant also submits that claims 2-11, which depend upon claim 1, claims 13-22, which depend upon claim 12, and claims 24-33, which depend upon claim 23, are for the same reasons in condition for allowance and for reasons of the unique combinations recited in such claims.

CONCLUSION

It is submitted that the present application is presently in form for allowance. Such action is respectfully requested.

Respectfully submitted,

By __/Shun Yao/________
Shun Yao
Registration No. 59,242

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Shun Yao
PARK, VAUGHAN & FLEMING LLP
2820 Fifth Street
Davis, CA 95618-7759
Tel: (530) 759-1667
Fax: (530) 759-1665
Email: shun@parklegal.com